

# VIRGINIA WILDLIFE

JANUARY 1992

ONE DOLLAR



# Editor's Page

"There are no perfect people. There are only perfect intentions."

—from the Warner Bros. movie "Robin Hood"

We're hearing more and more about the importance of ethics when we talk about hunting these days. But ethics is a word I've never been very comfortable with, probably because I always seem to have to look it up in the dictionary every time I hear it. I even went to the library last summer in a search of an understanding of ethics, and I came upon a whole row of books on the subject. Sadly, I left the library after an hour of going through each book, unable to get past the first few pages of four-syllable words I couldn't pronounce. It gave me a headache.

So, I went back to my trusty old *Webster's Ninth New Collegiate Dictionary* and reread: "Ethics is the discipline dealing with what is good and bad and with moral duty and obligation." Not bad. Encouraged, I moved onto the mammoth *Webster's New International Dictionary, 2nd Edition*. "Ethical," it said, comes from the Greek word "ethos" which means "custom, usage, character, dwelling." Even more interesting was the fact that the word could have come from the Gothic "sidus," the German "sitte," or the Sanskrit "svadha," which originally meant "one's own doing."

"Ethic," the dictionary continued, means "character, or the ideals of character, manifested by a race or people." Further down the page, "ethics," is defined as "the science of moral duty; more broadly, the science of the ideal human character and the ideal ends of human action."

I suppose this means that although most hunters might have ethics, more people are beginning to feel that a

hunter's "own doings" aren't of the sort which endear themselves to anyone, least of all the landowner whose fences are getting torn down and lands littered by trespassers.

How in the heck did we ever get ourselves in such a pickle? How did it come about that so many of us have lost our sense of right and wrong when it comes to sportsmanship and proper conduct in the field? Well, why not look around you? Read the newspaper and you find news of wealthy men, of politicians, of businessmen who have gotten to the top of their professions through selfish and greedy and inconsiderate behavior. So, we all yawn and say, "What a pity. I knew they were scum in the first place." But do we really believe that? I wonder if we don't really cynically think, "Well, they were just the unlucky ones who got caught. Everyone does it. I wouldn't necessarily call them bad."

My friend Brenda unearthed a great find the other day. She called me up and said, "You want ethics?" she asked. "It's all right there in the Old Testament—in Proverbs and Ecclesiastes. All you have to do is to read those and you'll know how you should behave."

I'm sure that all the great world religions teach similar ideals of right and wrong, honor and courage and duty, and how to live a decent life in a respectable manner. But I would hate to venture a guess on the number of old versus young people in attendance at church today.

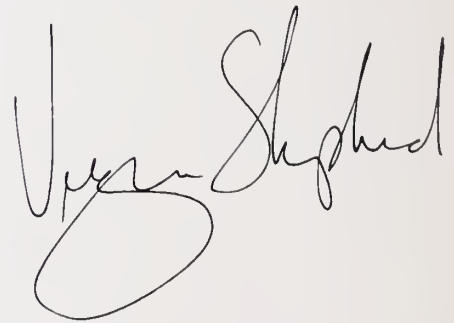
So, what if you can't find in modern-day religion the inspiration you need to latch onto a decent code of ethics? At a recent hunter education workshop on ethics, I asked the group if it was possible to teach ethics in the mandatory hunter education course offered by the Virginia Department of Game and Inland Fisheries. The

group gave me a resounding "No!" They told me that the teaching of proper behavior, those guiding beliefs of sportsmanship, must be learned at home. One veteran hunter education instructor told me it was impossible to develop a sense of hunting ethics in the 1 to 2 hours of the 10-hour course allotted to that subject, so he simply did not try. Instead, after much soul searching, he had decided that what he could teach, what he could succeed at doing, was teaching these youngsters how to be safe in the woods with firearms, thereby possibly saving innocent lives.

I thought the instructor had a point. But I'm not sure we can afford to give up our attempt to instill in our sportsmen an unshakeable belief in the behavior we all adhere to as proper and good and moral.

Two years ago, I was in Colombia, South America. I was taken through a beautiful old church in Cali, and my guide pointed out the image of the Virgin Mary, adorned with priceless emeralds and diamonds. "You know what?" said Margit. "This church is never locked, and even with all the poor, destitute people living in this city, not one emerald has ever been touched."

That's the kind of strength in a belief that we need to find in ourselves and figure out how to pass on to others, no matter how much time and effort it takes.







Predators—friends or foes to small game? See p. 4 for details; photo by Bill Lea.

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**Cover:** Eastern bluebird in snow by Rob Simpson.

**Back Cover:** photo by Dwight Dyke.

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*Dedicated to the Conservation of Virginia's Wildlife and Natural Resources*



# Wanted: Dead or Alive?

*It's a question that is never laid to rest: Are predators good or bad for small game populations?*

by Mike Fies

**T**he seasoned quail hunter held up his empty game pouch in disgust. "Too damned many foxes," he informed me. "The hawks and owls y'all are protectin' ain't helpin' matters, neither. Y'all need to open the season on hawks before they clean the bones of every bobwhite in the county."

As a small game biologist working in "troubled times," I find myself

receiving plenty of free advice about predator management. Small game populations have declined drastically in recent years while the numbers of foxes and hawks appear to have increased. To most small game hunters, the answer is plain and simple. Foxes and hawks eat quail and rabbits. Reducing the numbers of such "vermin" could do nothing but increase the supply of small game for

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Gray fox; photo by Gary Meszaros

and prey is extremely complex and not fully comprehended by even the most revered of wildlife scholars. To the average mortal, this issue is further complicated by deep-rooted prejudice and time-honored misinformation.

Our exposure to predators begins early in life. Before most of us are out of diapers, we learn to fear "the big bad wolf," the rogue determined on sinking his teeth into Little Red Riding Hood and The Three Little Pigs. In other nursery rhymes, foxes and weasels always seem to be portrayed as villains intent on devouring every "innocent" creature of the forest. By the time our children enter grade school, the average five-year-old has already acquired a general fear and contempt for any animal with canines and an appetite for another animal's flesh.

Perhaps as a result of our inherited prejudices, even we wildlife professionals have been slow to recognize the value of predators. Just a few short decades ago, government-sponsored bounties were commonplace and virtually any predator was shot on sight. Predators were despised and "executed" in the name of wildlife conservation. The few "nature-lovers" who spoke out against predator control were labeled as eccentric and their notions were generally disregarded.

Beginning about 1940, many wildlife biologists began to change their opinions about predators and wildlife. The general axiom that predator control automatically increased supplies of game animals was not borne out in the results of research studies. Numerous failed predator control experiments (and a few classic disasters) became documented in the scientific literature. Food habits studies of predators were also revealing that game animals were not the primary food source for most species. Soon it became widely recognized that predators thrived on the "annual surplus" of prey species and had little effect on population levels. The value of predators in culling the sick and weak animals from a population was also acknowledged as a benefit. Eventually, the status of predators rose from "vandal" to indispensable member of "the

balance of Nature."

But, "the times they are a changin'!" At the risk of being labeled Benedict Arnolds, it is true that today a few wildlife biologists are now beginning to take another look at the effects of predation on certain species of wildlife. Although no biologist worth his salt would ever advocate a return to the days of wholesale "varmint" slaughter, a few are starting to wonder if some predators might be taking more small game animals than we traditionally have been giving them credit for. Under "normal" circumstances, the general premise that predators have little influence on small game numbers is undoubtedly true. However, there are serious questions concerning how "normal" today's circumstances really are.

Before you shout, "I knew it all along!" and start blaming hawks and foxes for all your small game woes, you should carefully read on. The loss and deterioration of suitable habitat, *not* predators, has been the primary factor responsible for the drastic decline in quail and rabbit numbers. Only when habitat conditions are marginal and escape cover lacking, can predation be excessive.

Unfortunately, much of the small game habitat that remains in Virginia is of marginal quality. Large expanses of good escape cover have been reduced to small "islands" of suitable habitat. Biologists refer to this phenomenon as *habitat fragmentation*, a buzzword linked to the decline of everything from warblers to wolves. As habitats become more fragmented, mortality due to predation often increases. Predators are able to hunt small "islands" of habitat more efficiently than large areas of unbroken cover. It seems logical: a rabbit living in a small area of sparse cover is more likely to be eaten by a fox than the same rabbit inhabiting a much larger area of thick cover.

However, blanket condemnation of all predators that have ever been observed eating small game is an antiquated viewpoint that lacks understanding of the predator-prey system. Although rabbit and quail remains have been found in the stomachs and

the sportsman. Anyone with any "horse sense" should understand such straightforward logic, especially an "educated" biologist working for the Game Department.

But as Durwood Allen, a well-known wildlife biologist once stated, "Horse sense is, perhaps, good enough for the horse, but that does not admit the frequent implication that it is good enough for anyone." To truly understand the effects of predation on wildlife populations requires more than a superficial knowledge of nature. The relationship between predator





droppings of many predator species, only a few species consume small game animals in appreciable quantities. To say that "a hawk is a hawk" is akin to saying that a quail is a turkey. Before complaining that "hawks and foxes are killing all the game," the responsible sportsman should become familiar with the predator species in his area and learn more about their individual food habits.

Many predator species are incapable of capturing healthy small game animals. For example, the much maligned red-tailed hawk is generally too clumsy and slow to kill a wild adult bobwhite. On occasion, a red-tail is lucky enough to encounter a weakened or witless quail, a rare exception rather than a regular occurrence. In fact, the small mammals that constitute the bulk of the red-tail's diet are often quail nest predators. The idea that red-tailed hawks *benefit* quail populations by controlling nest predators is a tough pill for many hunters to swallow.

In general, small game predators fall into one of several categories: 1) nest predators, 2) larger mammals, 3) hawks and owls, and 4) domestic animals. The potential impacts of any of these groups of predators on small

game populations are dependent upon the ratio of small game animals to the population of predators, the availability of suitable escape cover, and the abundance of "buffers" or alternative foods for the predator. For example, the worst possible scenario for a rabbit would be to have a large number of foxes in a small area of sparse cover with few other prey items (mice, shrews, etc.) available.

The effects of nest predators, often the most significant to small game populations, are usually overlooked by sportsmen. Many small and mid-sized mammals, snakes, and some birds readily consume the eggs or young of small game species. During a three-year research project recently completed in Florida, predators destroyed 55 percent of the quail nests being studied. Most of this loss was attributed to mammals, primarily skunks, raccoons, opossums, and cotton rats. In other studies, large snakes have also been reported to consume quail eggs and even young rabbits. Herbert Stoddard, a well-known quail biologist, once observed a large pine snake that "swallowed 17 eggs in rapid succession and stopped only because there were no more." Crows and blue jays

*Above: Bobcats relish small game dinners if given the opportunity, but mice and other small mammals normally constitute the bulk of the diet for these species; photo by Bill Lea.*

*Above right: The red-shouldered hawk pictured here, along with the red-tailed hawk, are often regarded as the "winged enemies" of small game populations. Actually, both are relatively inefficient small game predators; photo by Bill Lea.*

*Right: The opossum is one of many overlooked nest predators of small game which readily consume eggs or young; photo by Garry Walter.*  
*Far right: Eastern cottontail; photo by Jack R. Colbert.*

have even been implicated in small game nest destructions.

Before denouncing all nest predators, one should consider the benefits that many of these species provide. For example, large snakes primarily subsist on rodents that also have the potential to destroy nests. In some situations, these same rodents may be beneficial as "buffer species" for larger predators such as foxes and owls. Egg-eating blue jays also break up acorns into available quail food and nest-pilfering crows regularly mob and harass large birds of prey. Do all these interrelationships sound complex? If not, they should. Those who advocate the indiscriminate killing of nest predators usually





where cottontails are abundant, more rabbits will be utilized by predators. When populations are low, the "law of diminishing returns" dictates that these adaptable predators spend their time hunting more readily available food items. For this reason, neither species is an important predator of bobwhites in Virginia.

The "winged enemies," hawks and owls, are perhaps the most despised of the small game predators by many hunters. Small game hunters often cite the federal protection of these birds of prey as being directly responsible for the observed declines in quail and rabbit numbers. The assumption, of course, is that hawk and owl numbers have increased as a result of protection. Although it's true that populations of a few species of hawks have increased in recent years, most species have continued to decline. The only two species of hawks exhibiting a significant population increase in Virginia are the red-tailed and red-shouldered hawks, both relatively inefficient small game predators. The Cooper's hawk, the most capable of the winged quail predators is believed to be declining in numbers.

The great horned owl, whose population has increased an average of 3.7 percent annually since 1966, is a skillful rabbit predator worthy of special distinction. In most food habits studies, rabbits are the single most abundant prey item taken by this species. As many as 100 rabbit skulls have been found under a single owl's nest and often the frequency of rabbits in a great horned owl's diet exceeds 40 percent. The barred owl, whose populations are increasing at a comparable rate, occasionally takes a rabbit, but subsists mostly on mice. In areas of sparse cover, it is quite possible for a great horned owl to significantly depress a local rabbit population. Because quail are inactive at night, owls rarely have an impact on bobwhite numbers, except as a benefit by controlling rodent populations.

Last, but certainly not least, are the domestic animal predators, primarily free-ranging dogs and cats. Ironically, many of the most outspoken critics of wild predators are guilty of permitting

their own household pets to run at large. Roaming dogs often harass small game animals and will destroy nests, and common house cats regularly kill incubating game birds and newly-hatched chicks. In many areas, feral and free-running tabbies are one of the greatest annihilators of small game populations. Even when well fed, feline pets instinctively pursue and kill an alarming number of rabbits and quail. During a recent three-year study in Pennsylvania, a female cat and her two offspring killed 47 cottontails, despite having food readily available at a nearby farm house. Cats are also adept bird killers, and can ravage a quail covey to the point of decimation. In Virginia, researchers at the University of Richmond estimate that as many as 26 million birds (all species combined) are killed every year by domestic cats! Clearly, free-running and feral house pets need to be controlled on lands managed for small game.



## Management Considerations

With the exception of controlling numbers of feral house pets, there is little biological justification for reducing predator numbers. Small game hunters who advocate a season on Cooper's hawks or great horned owls are living in a fantasy world; it will never happen! Attempts to lift protective measures from these species would result in the unconscionable destruction of more readily observed and beneficial raptors. Few landowners would be able to correctly identify the "legal" species, and would be certain to indiscriminately destroy any hawk or owl that crossed their paths. Consider Pennsylvania's goshawk eradication campaign of 1929. Upon examination

end up "eating crow" instead of eradicating them.

Large mammals, primarily foxes and bobcats, also are frequently blamed for "killing all the game." Certainly, foxes and bobcats relish a small game dinner if given the opportunity. In most food habits studies, however, mice and other small mammals constitute the bulk of the diet for these species. Generally, the frequency that cottontails are taken by foxes and bobcats is directly related to the availability of rabbits as a food source. In areas



of 503 carcasses submitted, only 76 (approximately 15 percent) were actually goshawks. Believe it or not, Virginia also once had a bounty on goshawks (1924-29), even though there was only one authentic record of a goshawk ever killed in the state! Nevertheless, 9450 heads were submitted for payment during this time period!

By far, the most effective method to minimize predator losses is to provide adequate escape cover. Even the most skillful Cooper's hawk has great difficulty preying upon quail that have quick access to thick cover. Similarly, a rabbit feeding in an area with sufficient overhead cover is unlikely to become a meal for a great horned owl. Ironically, many well-intentioned land managers actually increase predation by planting food plots and nesting areas that become "death traps" for small game animals. Small game plantings should be at least 50 feet wide and adjacent to thick cover.

Judicious furbearer management might also be considered by landowners attempting to increase small game numbers. Certain species, such as skunks, raccoons, and opossums do not control rodent populations and are capable of destroying significant numbers of small game nests. A balanced trapping program for these species (and other furbearers as well) is consistent with sound wildlife management principles. The key word is "balanced," which does not mean eradication. The wildlife literature is full of failed attempts to increase small game numbers by eradicating predators. Often the elimination of one predator species only increases the percentage of destruction by other less significant predators.

Before cursing predators on your next unsuccessful trip afield, take a moment to consider other possibilities. Predators make convenient scapegoats for frustratingly low small game populations that are almost always the result of some other problem. Most likely, habitat conditions are less than optimum in the area that you were

hunting. Remember that predators have coexisted with small game animals for millions of years and have never wiped out a single species.

You might also keep in mind that small game animals naturally produce a surplus of young animals. Quail and rabbits have an enormous reproductive potential, and few were ever intended to survive to adulthood. Even in the complete absence of predators,



The great horned owl is a skillful rabbit predator, and often the frequency of rabbits in its diet exceeds 40 percent. However, by far the most effective method to minimize small game losses from such winged predators is to provide rabbits and quail with adequate escape cover; photo by Gary Meszaros.

nature will find ways (i.e. weather, starvation, disease, and parasites) to trim populations back to levels consistent with available food and cover supplies. In fact, predators often benefit a small game population by removing sick and weak animals, thus limiting the spread of disease. Contrary to popular notion, it just isn't possible to stockpile small game. As one outdoor writer put it: "Stockpiling rabbits is like saving an ice cream cone on an August day; you can do it for only so long, and then nature steps in."

As long as we're considering the

potential benefits of predators, you might as well ask yourself how quail developed such superior flight capabilities, or how the rabbit you jumped learned to give your beagles "the slip." Without consistent harassment from predators through the eons, it's quite possible that bobwhites might be flightless or that rabbits might crawl like turtles! Sounds absurd, but there can be no denying that predators are largely responsible for the sporting attributes of many game animals.

Through the years, I've learned not to despise predators, but to respect them. While on a deer stand last season, I watched in awe as a red-tailed hawk swooped out of nowhere in a failed attempt to snatch a gray squirrel from a limb above me. The hawk leaped from branch to branch as the squirrel scurried nimbly through the treetop. Eventually, the hawk admitted defeat and flew off while the gray squirrel chattered in disgust. Instead of ruining my day, the silent drama that I witnessed was the highlight of my season.

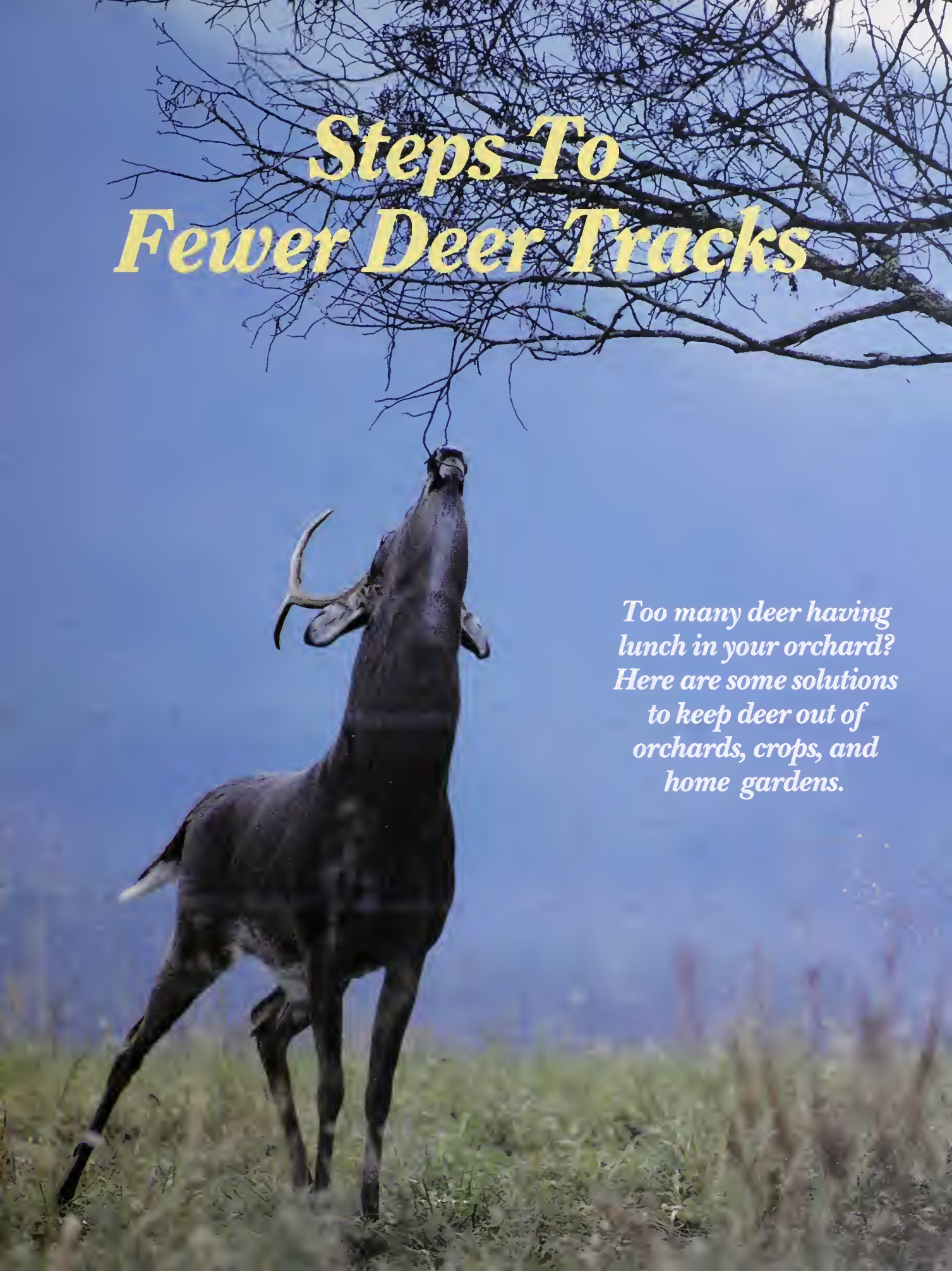
It's all a matter of balance. Perhaps Aldo Leopold stated it best when he wrote: "Harmony with the land is like harmony with a friend; you cannot cherish his right hand and chop off his left." Predators and prey are mutually dependent upon each other. Recognizing the importance of predators, even those who compete with us for "our" game animals, is a necessary step in truly appreciating the natural world in which we live. □

Mike Fies is a small game research biologist with the Department's Wildlife Division.

*"Breathes there a man with soul so dead that for a few more limit kills or a few more trophies in his lifetime, he would once and for all erase the fox track from December snow, the eagle and osprey from the mountain air, the wolf song from the brittle arctic night?"*

Durwood Allen  
Our Wildlife Legacy



A photograph of a deer with antlers standing in a grassy field, reaching up to eat from a bare tree branch. The background is a clear blue sky. The title 'Steps To Fewer Deer Tracks' is written in a large, yellow, serif font across the top of the image.

# *Steps To Fewer Deer Tracks*

*Too many deer having  
lunch in your orchard?  
Here are some solutions  
to keep deer out of  
orchards, crops, and  
home gardens.*





photo by Rob Simpson

by: Jim Bowman

Wildlife Biologist Manager

When Terry Saunders acquired his Bedford County orchard over 40 years ago, he knew he would have to compete against nature's onslaught of insects, diseases, weather and rodents. He soon learned that he also would have to deal with a larger animal that could do extensive orchard damage. His orchard happened to be located adjacent to Peaks of Otter, one of the two remaining sites of wild elk populations in Virginia. Elk could inflict extensive damage by rubbing antlers on young trees, as well as by eating buds and fruit. Saunders' troubles with elk were over by 1970 when the last of Virginia's restocked wild elk were observed in Bedford and Giles Counties. But, his troubles had just begun with one of its smaller relatives, the white-tailed deer, which was rapidly increasing in numbers statewide.

White-tailed deer have dramatically increased in abundance in Virginia during the past half century. From remnant populations that existed primarily in the swamps of eastern Virginia in the early 1900s, deer numbers have swelled to an estimated statewide population of almost a million today. This increase has been especially dramatic in some parts of the state. For example, in Bedford County where Jerry Saunders manages his orchard, the reported deer harvest in 1970 was only 136 animals. The 1990 reported harvest for the same county was 4686 deer, a 33-fold increase.

The white-tailed deer is perhaps Virginia's most prominent and popular wildlife species. It is the most sought-after game animal in Virginia and is commonly observed in rural, and sometimes suburban, areas throughout the state. As deer have increased in abundance, however, conflicts with landowners have also increased. And these conflicts do not arise only with rural landowners such as farmers and orchardists, but also occur in urban communities such as Fairfax, Virginia Beach and Lynchburg.

"And what kind of damage could such a beautiful creature possibly do?" you may ask. The most common type of damage results from deer browsing or feeding on crops or plants not intended for their consumption. Although deer will eat almost any plant, they tend to be selective in favor of those that are the most palatable and nutritious. Frequently, this involves agricultural crops such as corn, soybeans, alfalfa, and other commonly-grown varieties. In more recent years, there are increasing reports of severe damage to truck crops such as tomatoes, and even significant damage to tobacco. Of course, home gardens are frequent targets as well. Deer may also

inflict serious damage to fruit orchards, Christmas tree plantations, forest regeneration areas and ornamental shrubs by browsing or by antler rubbing during the fall breeding season.

Bill Blackwell serves on a Lynchburg City Council-appointed citizen task force which is searching for methods to address deer-related problems within the city. According to Blackwell, "the biggest problems arise from damage to ornamental shrubs and home gardens, plus deer-related vehicle accidents." Solutions to deer management problems are more difficult in urban settings because strategies often must be acceptable to the community rather than to individual landowners, plus control measures are much more limited due to human safety considerations. As suburban communities continue to expand in areas of suitable habitat, deer-related conflicts are likely to increase.

Traffic safety statistics indicate increasing numbers of deer-related vehicle accidents. A total of 515 highway accidents in which deer were involved were reported in Virginia in 1966. By 1990, this figure had soared to more than 3400 deer/auto collisions which resulted in over 4 million dollars in property damage.



The increasing numbers of white-tailed deer in the state are causing problems for farmers throughout the state. The best remedy is regulated hunting to keep deer damage down, but there are additional preventative measures available such as fencing and repellents, photo by Steve M. Eberhardt.



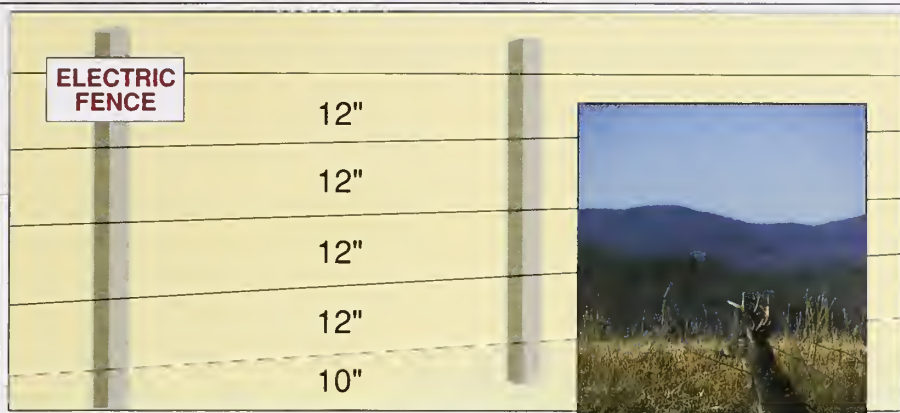


Figure 1

Figure 1: Commonly called the "Penn State deer fence," here five electrified wire strands are spaced 12 inches apart with the bottom strand 10 inches from the ground surface.

Figure 2: Another electric fence design uses 7 strands spaced 12 inches apart and slanted at a 45-degree angle. Graphics by Pels.

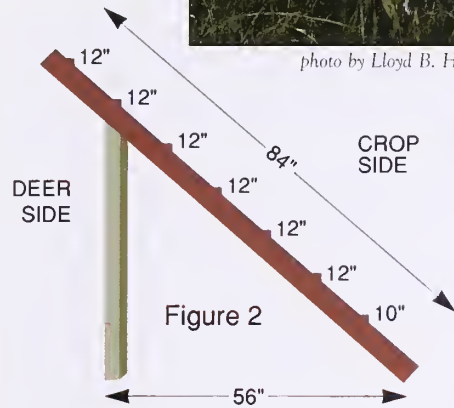


Figure 2

Under ideal conditions deer herds can increase up to 50 percent annually, although actual recruitment is usually less due to environmental constraints. Regulated public hunting is certainly the most effective tool for controlling deer numbers on a broad scale and on a continuing basis. It is essential to remove an adequate number of females (does) along with males (bucks) in the annual harvest. Our experience in Virginia has shown that a component of about 40-50 percent females in the annual harvest is required in order to effectively stop herd growth, depending upon local conditions. With burgeoning deer numbers virtually statewide, hunting regulations now in effect are designed to restrict herd growth or, in some areas, actually reduce deer numbers.

Are there effective measures to control damage caused by deer? The answer is "yes." There is an array of potential remedies, but costs and effectiveness are variable. Techniques generally fall within one of three categories: exclude, repel, or remove. Depending upon the circumstances

involved, the solution to a deer damage problem may require any one or a combination of control techniques.

### Exclusion

A fence which is capable of excluding deer is perhaps the best long-term solution to preventing deer damage. To be totally effective, the fence must be constructed of woven wire to prevent penetration and should be at least 8-feet high to prevent deer from jumping over or crawling underneath. Such a fence is expensive to construct and, therefore, impractical for most applications. However, innovative designs for electric fencing are available which are more economical to install and may effectively reduce intrusion by deer when properly managed.

Electric fencing can be effective because deer usually attempt to crawl through or underneath a fence before attempting to jump over it. If they come in contact with an electrified strand, this usually deters them from again approaching closely enough to jump the fence.

To be most effective, **the fence should remain electrified at all times**

and preferably should be installed before deer are conditioned to seek the targeted crop, i.e. a home garden or an orchard. To prevent loss of electrical current, vegetation adjoining the fence should be clipped regularly and fallen tree limbs and other debris should be removed. Also, there should be an unwooded zone at least 8-ft. wide along the outside perimeter which encourages deer to walk as they approach the fence. If the fence is not properly installed and managed, deer will not be averted and will quickly learn that it can be safely jumped, even when the fence is "hot." Improper management is the primary reason that electric fencing sometimes fails to avert deer intrusion.

A simple and relatively inexpensive electric fence design suitable for home gardens and similar applications may be constructed using a single strand of smooth wire that is suspended 2.5 feet above ground surface and is electrified with a standard 6-, 12- or 110-volt power supply. Developed by the Minnesota Department of Natural Resources, this design employs the use of aluminum foil strips attached with duct tape to the wire at 3 to 4-ft. intervals. A mixture of peanut butter and peanut oil is painted on the surface of the tape backing, which is then folded inside the 3" x 4" aluminum foil strips. The aroma encourages an approaching deer to touch the electrified wire or foil with its nose or tongue, which should insure that it receives a deterring shock. A similar alternative is a woven nylon strip which contains fine strands of wire designed for electrification and which is available commercially. This product can be installed in a manner similar to that described for the single wire strand, but the peanut butter "bait" may be applied directly to the nylon strip.

Some electric fence designs are based upon technology developed for cattle and sheep ranches in New Zealand and Australia. The systems employ the use of high-tensile wire, pressure-treated posts, and high-voltage low-impedance energizers. Such systems are long-lived (30-40 years) and require less maintenance than conventional fences. The low-

impedance energizer greatly reduces problems with energy loss when the wire is touched by encroaching vegetation or fallen limbs. And high-tensile wire can withstand impact from large animals, fallen trees or even farm machinery without breaking or stretching. Basic installation costs may be as low as about \$0.40 per linear foot for a fence designed to deter deer, but costs are greater in uneven terrain which requires additional bracing and line-posts. Costs for this type of fence are typically far less than for conventional woven-wire and may readily pay for themselves when used to protect high-value crops. Proper installation and maintenance is essential if such fences are to be effective, even though total exclusion may still be difficult to achieve where high deer numbers occur.

Several configurations of high-tensile electric deer fences have been used with success. Most commonly these involve 5 to 7 strands of wire and are oriented either vertically or slanted. One design, commonly called the Penn State deer fence (fig. 1), employs 5 strands that are spaced 12 inches apart with the bottom strand spaced 10 inches from the ground surface. This spacing insures good contact if a deer attempts to crawl through or beneath the fence. Another design uses 7 strands spaced 12 inches apart (fig. 2), but the fence is slanted at a 45-degree angle which presents a horizontal as well as vertical barrier.

A valuable reference on the subject of this type of fence construction is *High-Tensile Wire Fencing* (1981, bulletin no. 11), which may be obtained from the Northeast Regional Agricultural Engineering Service, Riley Robb Hall, Cornell University, Ithaca, NY 14853, for a nominal charge. Many local fence construction companies in Virginia can also provide information and advice about high-tensile fencing.

## Repellents

Chemical repellents should provide either a taste or odor which is unpleasant to deer and, thus, discour-

ages deer from feeding upon treated areas or crops. Many "home remedies" have been tried and in recent years commercial chemical repellents have also become available. Effectiveness varies with deer density levels, weather conditions, availability of alternate food sources and perhaps other environmental factors. Because of this, a particular repellent may seem to be



*Orchardists in Virginia suffer from deer damage every year. Electric fencing, if properly installed and maintained, is probably the most effective way to keep deer out of valuable orchards, although chemical repellents, including bars of soap hung from individual trees have been used with some success; photo by Ted Rose.*

effective for one farmer but it may not work for his neighbor. An additional consideration is that repellents must be reapplied periodically to replenish aversive qualities, especially following periods of rainfall. One should not expect any repellent to provide complete protection from deer damage. Because of costs and logistics, chemical repellents are generally most practical for applications involving home gardens, ornamental shrubs and orchards, but not field crops.

Among home remedies that may

have some aversive qualities are human hair, blood meal, tankage, and bars of soap. Hung in small mesh bags on individual plants or around the perimeter of a small area, human hair is probably the least effective of these items. Blood meal and tankage are animal byproducts and may be obtained from a slaughter house or from some local agricultural suppliers. These two items have been used for many years by orchardists and apparently provide some degree of protection, although results are variable. Blood meal may be spread on the ground or hung in bags in the manner described above for hair. Tankage may also be hung in the same manner in mesh bags or in open plastic or metal containers that are punctured to allow precipitation to drain. More recently, bars of soap have been used with some effectiveness to protect fruit orchards when hung from individual trees. The soap bar is punctured with the paper wrapper intact and then attached with wire.

A variety of chemical repellents are manufactured commercially. Among active ingredients used in these products are putrescent egg solids, ammonium soaps, capsaicin, bone tar oil and thiram, a fungicide (table 1). Some of these products may be applied in combination with other pesticides, which may reduce application costs. As with all chemicals, follow application directions carefully to insure safety and greatest effectiveness. Some of these products may be purchased through local agricultural suppliers in Virginia.

Exploding devices such as propane cannons and fireworks can be effective frightening devices, but deer tend to become accustomed to them quickly unless they are frequently moved. Additionally, they must be used throughout the period when crops are vulnerable. For these reasons, scare devices are not widely used for averting deer damage.

## Removal

The Department of Game and Inland Fisheries offers to landowners



**Table 1. Examples of Chemical Deer Repellents Available Commercially**

<b>Repellent</b>	<b>Active Ingredient</b>	<b>Manufacturer</b>
Deer Away	37% Putrescent Egg Solids	Deer Away 7744 W. 78th Street Minneapolis, MN 55435 612/829-0233
MKG Big Game Repellent	37% Putrescent Egg Solids	McLaughlin Gormly King Co 8810 Tenth Ave N. Minneapolis, MN 55427 612/544-0341
Hinder	15% Ammonium	Leffingwell Chemical Co. 111 S. Berry St. Box 1880 Brea, CA 92621 714/529-3973
Miller Hot Sauce	2.5% Capsaicin	Miller Chemical & Fertilizer Corp. Box 333 Hanover, PA 17331 717/632-8921
Magic Circle	93.8% Bone Tar Oil	State College Labs 840 William Lane Reading, PA 19612 215/921-0641
Gustafson 42-S	42% Thiram	Gustafson, Inc. 17400 Dallas N. Pkwy Suite 220 Dallas, TX 75252 800-527-4781
Chew-Not	20% Thiram	Nott Manuf. Co Pleasant Valley, NY 12569 914/635-3243
Bonide Rabbit-Deer Repellent	11% Thiram 11% Acrylic Polymer Resins	Bonide Chemical Co, Inc. 2 Wurz Ave. Yorkville, NY 13495 315/736-8231
Chaperone	7% Thiram	Sudbury Laboratory, Inc. 6 October Hill Rd. New Englander Industrial Park Holliston, MA 01746 617/429-7900

\* This list is for informational purposes only and is not intended to imply product endorsement.

experiencing deer damage an option for additional herd control during the regular hunting seasons. The Damage Control Assistance Program (DCAP) provides the landowner with a prescribed number of DCAP seals which may be issued to hunters for taking antlerless deer on the enrolled property. Each licensed hunter is entitled to use only one DCAP seal. To apply for participation in this program, the landowner must request an inspection by the local game warden at the time damage is occurring, which is normally well in advance of fall hunting seasons. If he then qualifies to participate in DCAP, the warden may authorize him to receive DCAP seals for use during the fall deer hunting seasons.

Perhaps a less desirable, but sometimes necessary option for the landowner is to request a "closed season kill permit" from the game warden when circumstances do not warrant deferring control until hunting season. Before such a permit may be issued, the landowner must demonstrate to the game warden that deer damage is occurring.

What about trapping and relocating nuisance deer? This approach is simply not feasible for two primary reasons. First, it would be cost prohibitive. Experience has shown relocation costs \$400 or more per animal, and most situations would require ongoing efforts. Secondly, suitable release sites are simply unavailable because deer are already numerous virtually statewide.

"An ounce of prevention is worth a pound of cure"—so goes the old saying. Regulated hunting is the best tool available for keeping deer herds in check and averting major damage problems resulting from excessive numbers. A landowner can enhance herd management by allowing deer hunting, but he should insist that female deer account for a major portion of the total harvest. Remember, removal of an adequate portion of female deer from the herd is the only way to effectively control deer numbers. □

*Jim Bowman is a wildlife biologist manager for the Virginia Department of Game and Inland Fisheries.*

# Captured in Bro

*Turner Sculpture  
Wildlife Gallery on the  
Eastern Shore is  
creating wildlife and  
capturing it –  
in bronze.*

By Virginia Shepherd

There's only one main highway that cuts through the Eastern Shore, and even then when you're travelling on Rte. 13, you tend to miss many of the small, unpretentious towns named on the map. Where was Nassawadox or Eastville? Did we already pass it?

You can be reassured that you haven't passed Onley when you catch sight of the gaily painted Turner Sculpture Wildlife Art Gallery building on the side of the road. What will stop you, though, as you

threaten to whiz through yet another tiny Eastern Shore town, are the life-sized bronze geese, seemingly floating in air among reeds in a fountain and the white-tailed deer locked in combat forever in a bronze tableau outside the building.

Inside, William Turner and his son David have transformed a gallery into a place for wildlife, capturing a humpback whale mid-leap and a river otter's dive forever—in bronze. For the past nine years, William and David have been casting bronze sculptures at this site with their own foundry and sending their exquisite work all over the country and across oceans from Ireland to Naples, Florida to the

White House.

But, it was a strange coincidence that this gallery, now so renown that even Barbara Bush has her own "Silver Fox" weathervane made by David Turner, should ever have been a reality at all. William Turner, an Eastern Shore native, though interested in sculpture as a teenager, became a dentist. For seven years after his graduation from dental school, he designed and manufactured porcelain wildlife figurines, and



Above: Turner Sculpture Gallery in Onley on Rt. 13; photo by Dwight Dyke.  
Below: William Turner at work; photo courtesy of Turner Sculpture.





# nze

Turner Porcelains had many customers, including Neiman-Marcus, Cartier's and J.E. Caldwell. Eventually, however, William turned from his dental practice and porcelain to bronze, a medium with few size limitations and a permanence porcelain could never promise.

According to his written history of Turner Sculpture, William insisted that "being ignorant of obstacles seems to be one of my best attributes," and he proceeded to experiment with bronze in his airplane hangar. In 1982, having perfected a casting technique, he and his son David (who by now had joined him) purchased the building on Rte. 13 and built a foundry there.

Today, the Turners exhibit over 150 limited edition pieces for sale at their gallery, in addition to taking on commissioned pieces for museums, zoos, schools, businesses, organizations and individuals. The lost wax bronze process

which the Turners use to cast their bronze is a time-consuming, labor-intensive procedure, and it takes them about two months to complete a piece from start to fin-



*Greenwing teal by David H. Turner. A limited edition of 25, this sculpture stands 24 1/2" high by 20" wide by 12" long; photo by William H. Turner.*

ish. With works ranging from tiny bobwhites to mammoth fountain pieces like the bronze Canada geese caught in mid-flight outside their building, they prefer to use live models whenever they are able to capture the liquid motion of their subjects, which makes their bronze dolphins and loggerhead turtles seem to swim in air, and their feeding terns seem to be poised lightly in mid-air before diving for fish. This means they take trips to zoos and even sometimes hatch their subjects in their studios. In addition, their studios are full of reference photos and magazines featuring their wildlife subjects, and even taxidermist mounts are sometimes used for getting each detail right.

Both William and David have an intense love for the wildlife they sculpt, and in appreciation for the work the Virginia Department of Game and Inland Fisheries has done for the wildlife of Virginia, they donated a bronze sculpture of a bald eagle to the Department in 1990. It will be on display in the newly-renovated lobby of the Game Department.

The Turners recently announced another gift to the wildlife of Virginia. They will begin work on a limited edition sculpture to benefit Virginia's Nongame and Endangered Species Fund, donating a major portion of the proceeds from each piece to the program. Be on the lookout for details on the special bronze sculpture in upcoming issues of *Virginia Wildlife*.

For more information on Turner Sculpture, write Box 128, Onley, VA 23418, or call (804) 787-2818.





1

## Lost Wax Bronze Process

by William Turner

This method of casting bronze is an ancient craft, at least 5,000 years old. It remains essentially unchanged, but has been improved with modern technology. We believe we have made some improvements.

The first step in the creation of a bronze sculpture is a mental concept nourished and inspired by observation. If this is a large or complex bronze we usually design a maquette (a miniature scale model) of the proposed larger one. This gives one a good idea what the finished bronze will look like before the actual model is begun, allowing for manipu-

lation and experimentation on a small and convenient scale.

The next step is the creation of a model in clay or wax that will be exactly like the proposed sculpture. In doing this one must anticipate mold making, welding joints, etc. so that future steps are as easy as possible.

Next a rubber and/or plaster mold is made of every part of the sculpture. Sometimes there is one piece, sometimes many. After the mold is made the clay or wax model is of no further use and is usually recycled. Clay that is a frog today may be an elephant tomorrow.



2



3

Photos on pps. 16-19 illustrate the lost wax bronze process used by the Turners. Refer to the numbers on the photos for the steps on page 17 and 18. (photos 2-13 by Dwight Dyke)





4



5



7

1) First, a clay model is made. David Turner works here on "Black Bears," a life-size sculpture made for the Philadelphia Zoo; photo by William H. Turner.

2) Often, a sculpture must be broken down into several pieces in the initial molding process and then welded back together once the bronze is poured. Here, the clay mold of a peregrine falcon is carefully being cut into several manageable pieces.

3) Next, a rubber and plaster mold is made of the sculpture and the clay mold discarded.

4 & 5) Hot wax is brushed and poured into the new mold.

6) Once the wax has hardened, the rubber mold is peeled off and the wax casting cleaned up.

7) Wax gates and vents are attached to the wax pattern in preparation for making the ceramic shell mold.

8) The wax pattern is then dipped alternately into liquid silica and then powdered silica and allowed to dry. After about a week of silica dipping, the mold is thick enough to hold molten bronze.

Into the mold hot wax is brushed and poured to form a hollow wax pattern identical to the original model. For every bronze that will be made there must be a wax pattern.

After wax gates, vents, and channels are attached to

the wax pattern it is ready to be invested. This means a mold of a refractory material will be built around and into the hollow wax pattern. This is done by alternately dipping the wax into a liquid silica and then powdered silica, allowing each coat to dry for several hours.

After about a week the mold is built up to the thickness needed to hold molten bronze.

This wax pattern, encased in a silica mold, is then placed in a 1500° F oven and the wax is melted out, leaving a hollow silica mold ready to receive the molten bronze.

The mold is allowed to cool and, after inspection for cracks, is inverted (with the opening pointed up) in the same oven and reheated. At the same time, bronze ingots are melted (2000° F) and the molten bronze is poured into the hot silica mold.

After cooling, the mold is removed with hammers and a sandblaster. The bronze sprues and vents are removed and the casting remains. If more than one piece is involved in the sculpture, the parts are welded together and the resulting seams removed with careful grinding and sanding.

After a final sandblasting or glassbeading, the bronze is ready for the final finish, a patina. Patinas are created by applying liquid chemicals to the surface of the bronze after it is heated with a blow torch. Under heat these chemicals react with the copper content of the bronze alloy to give a controlled oxidation. Colors can vary according to the intensity of the heat and the chemicals used. Usually many coats are applied until the desired color is obtained.

The final step is the application of several coats of wax or sealer to enrich the color and protect the bronze. □





8



11



12



9



13



10

9) The wax pattern is then melted out of the ceramic shell mold in a 1500° F oven.

10) The ceramic shell molds are then ready to be cast.

Bronze ingots melted in a 2000° F oven are poured into the preheated molds (page 19).

11) After cooling, the ceramic shell mold is removed with hammers and sandblasters.

12) The bronze gates and vents are removed; bronze parts are welded together, and seams are sanded.

13) Patinas are applied with liquid chemicals to the heated bronze sculpture.

Page 19 inset: Though long and involved, the lost wax bronze process used by the Turners produces exquisite sculptures, and showcases their talent at creating wildlife, like the osprey with speckled trout in bronze and sterling silver by William H. Turner; photos by William H. Turner.







# Look Ma, I'm on Tee Vee!

*There's even more to the Virginia Department of Game and Inland Fisheries' award-winning Virginia Wildlife Video Magazine than meets the eye. Entertaining and educational up front, behind-the-scenes is where things really start to happen.*

by Roy Edwards



“I love to see my anglers suffer!” exclaimed Bill Dixon to me as I was well into the third hour of a battle with what felt like a runaway train. Line was peeling off my reel with dizzying speed. The pain in my back was getting worse and muscles in my arms and shoulders had long since gone numb. Here I was, 60 miles off the coast of Virginia with a small boat under my feet and a handful of rod and reel that was hooked to more than we came for. As Bill would say later, “I expected you to hook up an 80 or 90- pound white marlin and get him on camera jumping a few times.” Typically, this kind of video trip was only supposed to take little more than a half day. What followed was a seven and a half hour struggle with a monstrous blue marlin that went on long after the sun had gone down. We were more than 90 miles offshore when it

ended. Cameraman Lee Walker was out of tape, batteries and energy as well, but he had the makings of a super beginning for the 1991 season of the Game Department's television program.

*Virginia Wildlife Video Magazine* begins its 1992 season this month with the promise of expanded coverage for Virginia's wildlife management programs and outdoor recreational opportunities. The critically acclaimed program, which has won awards in national and regional competitions during its first two years, is one of the efforts of the Public Relations Division of the Virginia Game Department.

“On the Road Again” is our theme song as we travel throughout Virginia from side to side and top to bottom gathering material for the weekly series. The thousands of viewers who tune in will see a magazine-for-

matted program dedicated to making wise use of our natural resources. “Magazine format” means the show is divided into segments, each one presenting a different look at wildlife management, fishing and other outdoor pursuits. As host, I'm the guy you see on camera, but the video you see throughout the show is the sharp eye of the other half of the team, Lee Walker.

Each week opens with a fishing segment on one of the state's many lakes or rivers. I usually play the straight man while a local expert guides viewers through the techniques it takes to make the trip a positive experience. The journeys vary from fishing a little river for the smallest of sunfish to running 90 miles out in the Atlantic Ocean for a seven and a half hour battle with a blue marlin that may have been a world record.





Roy Edwards and Lee Walker shoot, write, and produce *Virginia Wildlife Video Magazine*, a weekly outdoors show covering fishing, wildlife

management and people in the outdoors; photo by Lee Walker, inset by Mel White.

This year's opening show on January 5 will feature a float trip down the New River from Glen Linn, Virginia into West Virginia waters. I had the "unenviable" task of catching small-mouth bass from the front of a dory while our "local expert" Bill "Weasel" Simms dug in with the oars to negotiate class three and four rapids. Lee clung to the front of a second dory shooting the action as the big boat alternately glided and bounced through the New River's crystalline water. The trip was an overnight event complete with a campfire meal featuring the "specialty of the house:" fresh green salad, thick New York cut steaks and homemade cobbler cooked over the coals in a cast-iron Dutch oven. What you see on your television set at home looks as if we had nothing but a great deal of fun.

In reality, each day started with

preparations before dawn and continued with a formidable shooting schedule that ended with us rigging lights to capture our guides crawling into their sleeping bags at midnight. On a "shoot" such as this, you have to take advantage of the moment, constantly working to document every catch and fishing each pool. You never know when that big fish that will make the show special is going to hit, and you never stop fishing and "taping" for that magic moment. Of course you can make a show with many small fish catches, but the viewer sure appreciates seeing the lunkers come to the boat. We never set up catches or fake anything to show a big fish. We believe that sportsmen out there are too sharp. They know when you're trying to pull the wool over their eyes.

In 1992, we'll take you fishing in Virginia's southwest on a great trip to

the North Fork of the Holston River.

In the spring we'll try a fly rod for bluegills on the Nottoway River, and I finally had someone show me their secrets on the Chickahominy River below Richmond. We worked in a dolphin trip, too, because we know how many of our viewers love their salt-water action.

While the fishing segments look like nonstop recreation, they're the part of the program that take the most work. Each day generally runs from sunrise to sunset. Fishing for pleasure is one thing, fishing for television is another matter. If your weekend trip is unproductive, you can go by the fish market on the way home. If your shoot is unsuccessful, you do it again and again or miss it altogether. The technicalities of video also make for long hours. For the camera, the best light is before and after the middle of the day, and to get those spectacular sunrises and sunsets, you have to be there when they happen!

Wildlife or fisheries management makes up the second segment of each show. This is our chance to show off the Department's excellent group of biologists whose complex work maintains the diversity of Virginia's wildlife. Upcoming shows will feature segments on the almost unbelievable trophy deer at Radford Army Arsenal, and striped bass work that's helping to bringing back this exciting sport fish to the Chesapeake Bay. Another management show features biologists saving abandoned bear cubs by placing them with a foster mother.

"Nature" footage of this kind is probably the most deceptive, non-theatrical part of television. What you will see is a rather smooth operation... but was it? "Filming" it meant heading to the top of Shenandoah National Park on an icy, windy, just plain raw day. It meant hiking up the mountain with 50 pounds of camera and recorder slung over your shoulder to be told by





Although Virginia Wildlife Video Magazine is full of entertainment, thrills, and high-quality video, Lee Walker proves that the life of the

cameraman shooting the show is often subject to precarious footholds in dangerous places; photo by Mel White.

the biologist in charge that the bear was "up there." "There" was 60 yards up a sheer, ice-encrusted, rock face. We had to get close enough to shoot our biologist darting the bear, but not so close as to be in the way when she came roaring out of her den. And, all this had to be done in total silence so that the bear wouldn't wake up too soon. A couple of hours later we helped haul the drugged mother bear back into her den and assisted in making her comfortable with her new family. She had two new cubs, we had one still photographer with contusions and a smashed camera, and we had our story. Exhausted we were, but happy!

Nongame efforts that protect endangered bats are one of the management segments Lee and I will bring to your screen this season. Stories like this give us a chance to show the public the valuable work that's being done for all species. The tough part of producing these pieces is to make the scientific work not only understandable and entertaining, but educational as well.

Our third segment in each program is perhaps my favorite. It's a feature on any person, event, place or topic of information related to the out-

doors that we think you'll find interesting. It's here that Lee and I can be our most creative. Topics such as kids' fishing events, women professional bass anglers and Project WILD are some of the things we will look at this year. The result of these efforts wrap up a package we hope keeps viewers both entertained and knowledgeable about Department programs.

For the second year in a row, Virginia Wildlife Video Magazine will be carried on Home Team Sports (HTS) out of Washington, D.C. This cable network is the most cost-effective method we have found to distribute the program across Virginia. A bonus is the coverage the Game Department receives in North Carolina, Delaware, Maryland, Pennsylvania and Washington, D.C. Arrangements are also in place with WTKR TV-3 in Norfolk and WWBT TV-12 in Richmond to carry the program locally. Also in 1992, we will produce two more shows than we did last year, a total of 15 weeks of programs in all.

In 1990, Virginia Wildlife Video Magazine won first place honors as the best outdoor television program in the Association for Conservation Infor-

mation's (ACI) annual awards' contest. ACI is a national organization of state and federal wildlife or conservation agency public relations and information and education professionals. Recently, at a meeting of the Southeastern Outdoor Press Association (SEOPA), the program featuring the epic blue marlin fight won second place honors in the SEOPA Excellence in Craft competition.

These awards came about because of more than our efforts. They're the result of dedicated Virginia sportsmen nurturing their favorite pastimes, and they're the product of committed Game Department staff who make it easy and fun to produce this unusual television event.

We hope you enjoy the season! □

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Roy Edwards is the producer of Virginia Wildlife Video Magazine.

Virginia Wildlife Video Magazine can be seen on the cable Home Team Sports beginning January 5 on Sundays at 11:30 a.m. and additional times as available. Check Richmond and Norfolk local listings in January for airing times in those areas.





# The Little River— A Wilderness Adventure

*Floyd County's Little River is a river for the fisherman  
and canoeist in search of solitude and gentle waters.*

By Bob Gooch

**W**e'd been on the river most of the day, and except for fellow canoeists in our small party, we hadn't seen a soul. A farmhouse or two back from the stream, several unoccupied vacation cottages, and little else to remind us of the civilization we had left back at the launching area.

"We wanted a wilderness river for this trip," said Congressman Rick Boucher. "The New River is a fine canoeing stream, but a railroad runs along it, and there are numerous bridges and other signs of civilization."

The scenic Little River certainly satisfied the Congressman's desires—even though Floyd County is far from true wilderness. It's mostly rural, refreshingly so, picturesque farming country in the foothills of the Blue Ridge Mountains. Far downstream the river brushes a corner of Montgomery County and a bit of Pulaski, but mostly it's a Floyd County stream. Such is the country through which flows the picturesque Little River.

Congressman Boucher loves to show off the outdoor wonders of his sprawling Ninth Congressional District, and periodically he sets up wilderness outings for his staff and members of the media. This was such an outing, obviously one that met his criteria for a wilderness experience. You might say that Floyd County owns the Little River. Or does the Little River own Floyd County? It can certainly make a legitimate claim to much of it as it winds a meandering course through the hills of this southwest Virginia county. Floyd County citizens know their river well.

As the proverbial crow flies, it's 25 to 30 miles from the river's headwaters south of Copper Hill where it flows beneath the Secondary Route 160 bridge as a delightful little brook to its confluence with the New River near Radford. That, however, is far from the true length of the picturesque stream. It twists and turns, and runs a crooked course its entire length, often all but doubling back on itself. Follow its true course and we have a stream three or

four times that length.

Like the New River into which it flows, the Little River flows north or northwest. Its clean mountain waters join with those of the New and others of the ancient range of Appalachian Mountains to flow into the Gulf of Mexico.



The Little River might best be described as a fast river, but a gentle one. A paradox? Perhaps. There are some good rapids that might be rated as Class III at the strongest, and there is enough current to move a canoe along at a comfortable pace. Paddling is not demanding. Just keep the craft on course. Align it with the current, and enjoy the river.

Up at its headwaters between U.S. Highway 221 and the Blue Ridge Parkway, its tiny tributaries gather at elevations of 2,600 to 2,700 feet, but the Little River flows into the New River at approximately 1700 feet, a significant but gradual drop in elevation. The canoeist, however, doesn't reach the confluence. An Appalachian Power Company dam just upstream from the confluence raises the water level considerably. And much of that drop in elevation is far upstream along the steep slopes of the Blue Ridge Mountains. It flows beneath U. S. Highway 221 at Woods Store at 2,250 feet and drops to just under 2,100 at the Virginia Primary Highway 8 bridge.

Virginia Secondary Highway 605 crosses the river just above its confluence with the New River but below the



Appalachian Power Company Dam. Otherwise the last bridge downstream crosses the river at an elevation of 1820 feet. It carries Secondary Route 664, the Graystone Road, across the river where it becomes Route 613 and follows the stream to connect with Route 693 at Graystone. The elevation there is 1850 feet.





*The Little River provides the solitude, the drift back in time, the calm waters, and the fishing that make it one of Virginia's treasures.*

*Above left: Kayaker on a calm Little River day; photo by Lynda Richardson.*

*Left: Tobacco curing in a barn along the Little River; photo by Tim Wright.*

*Top: Rock bass, a plentiful fish in the Little River; photo by Soc Clay.*

*Above: Country road along the Little River; photo by Tim Wright.*

How much of the river is canoeable depends upon the weather and the amount of seasonal rainfall. And also to a degree upon the canoeist. Does he object to walking his craft through some occasional stretches of shallow water? Overall, the stream might be classified as a shallow one, and rarely dangerous. The Little River

picks up volume quickly, however, and it's a sizable stream by the time it reaches the Route 8 bridge. The more adventurous might even attempt canoeing downstream from U. S. Highway 221. Or even the West Fork of the Little River from where it flows beneath the Route 8 bridge just north of Floyd. The West Fork joins the main stem approximately 5 miles downstream from the Route 8 bridge with a drop in elevation of less than 50 feet.

Anglers or canoeists are first advised to get a set of topographic maps from the Virginia Division of Mineral Resources, McCormick Road, University Campus, P. O. Box 3667, Charlottesville, Virginia 22903, telephone: 804/293-5121. Ask for the series that covers the Little River in Floyd County. There are six of them beginning with the Check Quadrangle that covers the stream's headwaters and ending with the Radford Quadrangle that includes its confluence with the New River. In between are the Endicott, Floyd, Riner, and Alum Ridge Quadrangles. The set costs \$15.68 including tax. The maps sell

for \$2.50 each. They show river elevations, bridges, access roads, and outline graphically the meandering nature of the Little River.

At present, the only public access to the Little River is that provided by numerous public roads and the generosity of landowners. A number of bridges cross the river and many miles of it flow parallel to public byways. Getting on it is not much of a problem, but where private property is concerned, common courtesy and the law require that the permission of the landowner be obtained.

"Our future plans are to find some canoe access areas on the river" said Joe Williams, Department of Game and Inland Fisheries district biologist in whose district the Little River flows. "We would like to locate an access point six or eight miles upstream of the dam."

U. S. Highway 221 is the only federal highway crossing the stream. It does so at Woods Store. The stream is small here even when the flow is strong. Virginia Primary Route 8 between Christiansburg and Floyd crosses both the main stem and the West Fork of the Little River. The West Fork is small at the bridge, but the main stem is a sizable stream. Otherwise, access is by secondary roads, many of which are unimproved gravel routes, but passable by vehicles with good clearance such as 4 x 4's and pickup trucks. Some, however, are paved. The condition of the various access roads is shown on the topographic maps mentioned above.

Beginning downstream with Route 605 which crosses the river below the Appalachian Power Company Dam the other secondary routes which offer access are 664; 693 which crosses the river at Graystown to connect with 613; 601 which fords the river; 672 which ends at Scraggs Ford; 617; 705; 706; 810 over the West Fork; 615; 686; and 683 which fords the river twice, but far upstream near U.S. Highway 221. Upstream of the federal highway, Routes 166, 661, 639, 664, 711, and 648 provide access

and 610 crosses the stream west of Check. The Little River is tiny above U. S. Highway 221, a pleasant little mountain brook.

Most Virginia anglers probably know the Little River as a trout stream, one stocked with hatchery trout for the opening day the third Saturday in March. Over the years, brook, brown, and rainbow trout have been released, but currently only rainbows are stocked. The current policy of the Department of Game and Inland Fisheries is to stock a mile to a mile and a half of the stream along Secondary Route 706. Secondary Route 705 crosses the river here to connect with 706 which runs along the north side of the river. Route 705 is reached off of Primary Highway 8 north out of Floyd, the county seat.

For many years, a section of the Little River beginning a mile above and extending for two miles below Route 615 north of the town of Floyd was a special regulation trout stream. That section is now posted, however, and should be avoided without the written permission of the landowner. It is no longer stocked with trout. The landowners got tired of litter and other abuses, a warning to those who want to keep the rest of the stream open.

"Many of the little tributary streams hold native brook trout," said Joe Williams. This is particularly true of those at the higher elevations. "There are also self-sustaining populations of brown trout in some of them," he added. These are holdovers from the days when brown as well as rainbow trout were stocked in the stream.

Local anglers are familiar with the put-and-take trout fishing and the browns and brookies in the tributaries, but they probably know the Little River best as a fine smallmouth bass stream. You don't get much chance to fish when you're drifting down a stream in the company of a half dozen or so other canoes, but I did pack a light

spinning rod and occasionally got ahead of the pack or fell behind to sample the fishing. My efforts were rewarded with some fine smallmouth action, no big fish, but scrappy bronzebacks



*Wildlife is one of the bonuses of canoeing along the Little River (Northern water snake; photo by Lynda Richardson).*

typical of clean, free-flowing mountain streams.

"The river offers good smallmouth fishing throughout its length," advised Williams.

The corn and cheese brigade won't catch many smallmouth bass, but trout fisherman working spinning lures or fishing with flies or streamers are likely to mix in some bass action with the trout during the spring stocking season.

Like most of our western streams, the Little River also holds good populations of rock bass, and the plucky little redbreast sunfish that are a joy to catch.

"There are several kinds of sunfish in the river," said Williams.

Then there are the so-called coarse fish such as suckers, but no channel cats. "Maybe a few bullheads," added Joe Williams.

The Appalachian Power Company dam blocks channel cats, walleyes, and other New River fish from working up the Little River. There may be a few of these fish in the short stretch of

river below the dam, but not upstream.

Another Little River possibility is jump shooting for wood ducks. They are reasonably abundant in the lower stretches. Other ducks also use the river.

While we have taken a hard look at the canoeing possibilities, it is well to point out that the river offers many miles of shallow water that makes wading an ideal way to fish. During the warmer months, wading wet is possible, but at other times chest waders are advisable.

Secondary roads run parallel to many miles of the river, offering bank fishing and wading. Route 787 parallels the stream for a good stretch, south of its intersection with Route 693. So does Route 707 off of Route 8 in the Broad Shoals area. One interesting stretch is Little Camp Road, Route 716, off of Route 8 at the bridge. This runs along the river for several miles to a dead end. Route 706 runs parallel to the river in the trout stocking section, and further upstream Routes 810, 689, 682, and 683 run for good stretches along the stream. Many of these roads in the upstream area particularly are classed as unimproved to be used in dry or fair weather only.

The topographic maps are the key to locating accessible stretches of the Little River—and if sections of the stream are posted, by all means seek out the owners and get their permission before fishing.

Virginia is blessed with many miles of fine, free-flowing streams. They are among our most precious resources—to be respected and revered.

Floyd County's Little River is among the best. □

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*Bob Gooch is an outdoor writer living in Troy.*

*The Little River is under consideration for Scenic River designation by local and State governments.*



# Journal



Present at the dedication of the new Dick Cross Wildlife Management Area were (from left to right): Richard Hunter Cross, III, Josie Cross, Game Department Director Bud Bristow, and Virginia Association of Field Trials President Rogers Huff; photo by Roy Edwards.

## A Tribute to Dick Cross

On October 22, 1991, the Elm Hill Wildlife Management Area was renamed the Dick Cross Wildlife Management Area in honor of the late Dick Cross, former director of the Virginia Department of Game and Inland Fisheries.

Rogers Huff, president of the Virginia Association of Field Trials headed up the supporters of the name change of the management area to honor a man who had done so much for the wildlife of Virginia for 45 years. Huff prompted Delegate George Grayson of Williamsburg to introduce a House Joint Resolution No. 325 into the 1991 session of the General Assembly proposing the name change, and following its passage, the Board of the Virginia Department of Game and Inland Fisheries unanimously voted to support it.

Over 55 people attended the dedi-

cation ceremony of the 1,372-acre management area in Mecklenburg County which Dick Cross personally held close to his heart. While at the Department, Dick realized the potential of the area as a first-class field trial facility to encourage the training and working of sporting dogs, and supported the installment of first-rate kennels there. Today, the area has probably the finest facilities of its kind of any in the state and hosts numerous field trial events every year. The sportsmen of Virginia will never forget Dick Cross.

## Penalties Stiffened for Violators of Waterfowl Laws

In light of the continuing dramatic declines in waterfowl populations and their habitat in the Atlantic Flyway and

the large number of repeat offenders of waterfowl laws, the United States Attorney's Office increased the previous maximum for violations of the Migratory Bird Treaty Act from \$500 to \$5,000. This action is intended to reduce the continuing illegal take of migratory game birds. In Virginia, this action will affect those hunting ducks, geese, swans, rails, and doves.

Kenneth E. Melson, United States Attorney for the Eastern District of Virginia advised that after January 1, 1992, most first-time violations of the Migratory Bird Treaty Act will cost violators \$500. Melson further stated that migratory bird hunters in the Eastern District of Virginia should be aware of these increased penalties and the increased penalty exposure of \$5000 and/or six months in jail. Melson pointed out that during the past year, a Richmond first-time offender of hunting over bait and possessing lead shot was sentenced to pay a fine of \$1000 and lost his overall hunting privileges for one year.

Any specific questions concerning the migratory bird hunting regulations should be directed to the U.S. Fish and Wildlife Service at (804) 771-2481. Pamphlets which summarize these regulations are also available. □

## Status Report on Endangered Species Recovery Effort

The California condor, southern sea otter, the Lee pincushion cactus and the Devil's Hole pupfish are among the 41 percent of the Nation's endangered and threatened species whose populations are stable or increasing, according to a report to Congress recently released by the Inte-



rior Department's U.S. Fish and Wildlife Service.

"Endangered and Threatened Species Recovery Program" summarizes the status of the more than 580 federally endangered or threatened plants and animals in the United States. The report states that 38 percent of listed species are declining, while the exact status of about 19 percent is unknown.

The report, the first to pull together details on recovery efforts for each listed species, is required under a 1988 amendment to the Endangered Species Act directing the Secretary of the Interior to report to Congress every two years on the status of endangered species and recovery plans. This report covers listed species in the United States or its Trust territories under jurisdiction of the Department of the Interior as of October 1, 1990.

Copies of the 400-page report, stock number 024010-00691-9, are available for \$24 from the U.S. Government Printing Office, Superintendent of Documents, Washington, DC 20402. Credit card holders may order the report by telephone by calling 202-783-3238. □

## Money For States' Fish and Wildlife Programs Tops Quarter Billion Dollars

This year, state fish and wildlife agencies will share \$270 million in federal excise taxes paid by America's hunters and anglers. The funds will be made available through two federal aid programs administered by the Department's U.S. Fish and Wildlife Service.

"Generations of American hunters and anglers have demonstrated their long-term support of fish and wildlife conservation programs," said Fish and Wildlife Service Director John Turner. "They were among the first to form organizations to promote fish and wildlife issues and have voluntarily contributed millions of dollars to

programs that protect habitat and conduct research on the needs of wildlife. Such efforts have helped preserve healthy and abundant populations of many native wildlife species for all of us to enjoy."

The Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act), signed in 1937, and the Federal Aid in Sport Fish Restoration (Dingell-Johnson Act), signed in 1950, collectively have raised over \$2 billion, all earmarked for state fish and wildlife programs and used to fund land acquisition, habitat improvement, research, and education.

The preliminary apportionment for wildlife restoration and hunter education programs across the U.S. for fiscal year 1992 is \$127,600,000.

This money is derived from an 11-percent excise tax on sporting arms and ammunition, a 10-percent tax on pistols and revolvers, and an 11-percent tax on certain archery equipment. One-half of the tax on handguns and archery equipment is available for state hunter education programs.

The preliminary apportionment for sport fish restoration for fiscal year 1992 totals \$142,600,000. This money comes from a 10-percent excise tax on fishing equipment and a 3-percent tax on electric trolling motors and sonar fish finders. The "Wallop-Breaux" expansion legislation of 1984 increased the tax base for sport fish restoration to include a portion of the federal motorboat fuels tax and import duties on fishing tackle and pleasure boats.

Distribution of sport fish restoration funds to the states is based on the land and water area and the number of fishing license holders in each state. Wildlife restoration funds are made available based on land area and the number of hunting license holders in each state. Distribution of hunter education funds is based on the relative population of each state.

Wildlife restoration funds available, to Virginia this year total \$2,068,160, while hunter education

funds total \$675,000, and preliminary apportionments of federal aid in sport fish restoration funds total \$2,012,539. □



## Project WILD Receives President's Award

In a Rose Garden ceremony at the White House on October 31, 1991, President George Bush announced his selection of Project WILD as one of three recipients of the President's Environment and Conservation Challenge Award for Education and Communication. In bestowing this honor, the President is recognizing Project WILD as an organization that best exemplifies the cooperative, innovative spirit of the new environmental era in the area of education and communication.

Dr. Cheryl Charles, Executive Director of Project WILD, received the President's award for Excellence in Education and Communication on behalf of the sponsors of Project WILD. Project WILD is a conservation and environment education program for teachers of kindergarten through high school students in all 50 states and five countries.

The purpose of Project WILD is to educate youth to make informed decisions affecting the quality of the environment for people and wildlife. Founding co-sponsors of Project

WILD are the Western Association of Fish and Wildlife Agencies, an organization of the public wildlife agencies in the western U.S. and Canada.

In accepting the award, Dr. Charles stated that "public wildlife agencies deserve enormous credit for the accomplishments of this program. Their leadership, true partnership with educators, and willingness to stand behind their commitment with personnel and funds have all contributed substantially to Project WILD's success."

So far, Project WILD has provided free conservation education materials and workshops to more than 300,000 educators. These educators in turn have used Project WILD to teach more than 20 million students about the importance of the quality of the environment for people and wildlife. In Virginia, over 8,000 educators have been trained since 1983, with over 240,000 students being taught.

Project WILD is sponsored in Virginia by the Virginia Department of Game and Inland Fisheries and the Virginia Division of the Izaak Walton League. It is funded through donations to the Nongame and Endangered Species Program.

The President's Environment and Conservation Challenge Awards program is administered by the Council on Environment Quality, in a partnership with the National Geographic Society, the Hearst Corporation, the Business Roundtable and the World Wildlife Fund.

For additional information about Virginia's Project WILD, contact Suzie Gilley, Virginia Department of Game and Inland Fisheries, Project WILD, P.O. Box 11104, Richmond, Virginia 23230-1104. □

## New Trout Fishing Book Available

Veteran Old Dominion anglers and newcomers to Virginia's trout streams will find what they need in *Virginia Trout Streams: A Guide to Fishing*

*the Blue Ridge Watershed* by Harry Slone, just released by The Countryman Press, Inc. Broken down into six specific regions, and covering 60 classic trout streams with year-round populations of brook, rainbow, and brown trout, each entry offers detailed descriptions and clear, concise directions for reaching these streams—even those that lie down unmarked "two-track" dirt roads.

Included are streams in the Allegheny Highlands; outlying streams just a two-hour drive from the crowded waters surrounding Roanoke; and tips and suggestions for fishing the carefully managed waters of the Shenandoah National Park.

Maps and highway directions (including listing for specific USGS and DeLorme maps), license requirements, equipment, and tips on safety are included. A Hatch Chart (keyed to Virginia's stream types) is also part of the book, as well as a detailed section on the aquatic insects found along the Blue Ridge watersheds.

*Virginia Trout Streams: A Guide to Fishing the Blue Ridge Watershed* can be purchased in local bookstores or by sending a check for \$18.45 to: The Countryman Press, Inc., P.O. Box 175, Woodstock, VT 05091-0175. □

## Letters

### Beautyberry? Where to Find It

Okay, I am convinced and want to plant beautyberry (pg. 32, Nov 91) But where do I buy it?

Gerald F. Homa  
Clifton

You can buy beautyberry (*Callicarpa americana*) from We-Du Nursery, Rt. 5, Box 724, Marion, NC (704) 738-8300 for \$2.25 each. Orders under \$30.00 add 15% for shipping. Minimum order \$10.00.

Good Luck! You'll love it.

Nancy Hugo

### Virginia Wildlife Overseas

Last October my husband and I were lucky enough to spend two weeks

in Virginia Beach. We met some lovely people, especially Carl and Elly Taylor who kindly put our names forward for a 12 month subscription to your magazine *Virginia Wildlife*.

May we congratulate you on your production of such a superb magazine. We look forward to receiving *Virginia Wildlife* each month—it is a real treat! We certainly read it from cover to cover—I haven't got around to trying any of the recipes yet, but I will—except I think the slow baked squirrel! I don't think the Brits are quite ready for that.

I hope we will be able to visit Virginia again in the not too distant future and stay a little longer. It certainly is a beautiful place.

Keep up the good work.

Joan & Ward Peirson  
East Yorkshire, England

## Photo Correction

We inadvertently credited M.D. Johnson with having taken the photo of the trapper on page 26 in the November issue of *Virginia Wildlife*. In reality, Ron Keil of the Ohio Division of Wildlife took the photo. Our apologies to the photographer.

## Farewell

For the past three years, Nancy Hugo has entertained and educated us with her monthly "Habitat" column. We have learned what plants benefit wildlife, and how to bring them into our own backyards. Entertained by Nancy's delightful style of writing, we learned the history and lore of many of Virginia's colorful species. There was never a dull moment in her columns. Unfortunately for us, but fortunately for many high school students in Ashland, Virginia, Nancy has returned full-time to teaching, and can no longer keep up her columns. We will try to coerce her into writing for *Virginia Wildlife* whenever she has a free moment, even if it's only an occasional column. We will miss her, and we know you will, too.



# Photo Tips

## Exposing Yourself to Proper Exposure

by Lynda Richardson

The biggest problem that all photographers seem to face is how to get proper exposure. You can have an excellent eye for composition and lighting, but if your exposure is off, all that hard work in the field might be lost forever.

Most photographers are slaves to their camera exposure (or light) meter. They look through the camera at a beautiful scene, confidently set the exposure according to the meter and "click," they take a picture. Then, when the film comes back, they wonder why the pictures came out too dark or too light.

Every camera meter is supposed to be calibrated for an "average" middle tone defined as a subject that reflects 18% of the light striking it. No matter what the camera is aimed at, it is designed to make that subject 18% gray or middle tone. If you aim at 18% gray subjects like green grass, dry tree trunks or the brown coat of a white-tailed deer, you will get the proper exposure. But, if you're photographing a snowy hillside or a black bear, you're in big trouble!

By knowing that your camera meter is trying to give you an average, "gray" reading, you can compensate for it when shooting a "non-average" subject. When photographing snow, for example, look at the recommended exposure. It will give you a reading that will underexpose your film and make the snow gray. Knowing this, you can make a correct exposure by opening up your lens one or two stops depending on the brightness of the snow. This will give you white instead of gray snow. If your subject is a black bear, aim your camera and take a reading. The camera meter, in trying to make

the black bear gray, will overexpose the film. If you want your bear to appear black instead of gray, close down a half to a whole stop. Get the picture?

Now you can see how automatic cameras can really screw you up if you don't understand what they're doing. Remember, camera meters are set for average subjects and all exposures are based on 18% gray. Snow and



*Standing on a snowy hillside, this white-tailed deer could be standing in gray snow if you relied on the camera meter to give you a proper exposure; photo by Lynda Richardson.*

black bears will be recorded as gray if you let your camera make your decisions for you.

By understanding these principles, getting the proper exposure shouldn't be a problem, that is, if your meter is calibrated properly. One way to check a meter for proper calibration, is to simply go outside at midday and meter on something middle tone in bright sunlight. If you're still uncertain as to what a middle tone is, simply purchase a gray card at your local camera store and use that as the subject of your test.

Bright sunlit exposures, at infinity focus, should be approximately 1/ISO at f 16 or any equivalent. If your meter gives you a different reading simply change your ISO or exposure bias until you get a correct reading. By leaving your ISO/exposure bias at this setting, you will have the proper calibration for your camera for that particular

type of film. For example, if you're shooting with Kodachrome 64, round off 64 to the nearest shutter speed which would be 1/60th. If your meter gives you a reading of f 16, then your camera is properly calibrated. If not, just change the ISO or exposure bias until the meter reads f 16. This will give you an accurate meter reading for Kodachrome 64.

If you really want to learn about exposure, shoot slide film. With slides, what you see is what you get. Slide film has about a half f-stop exposure latitude. This means that if you're more than a half stop off in exposure, you'll see it. Color print film has a three f-stop exposure latitude. Since most people shoot with color print film, they usually never notice exposure mistakes because the film lab will normally compensate for any errors.

As you practice with slide film, I suggest writing down your exposures and noting if the subject appears average or not.

Then, when the slides come back, compare these notes to your film and you will begin to understand exposure. I would pick one type of slide film such as Fujichrome 50, Fujichrome 100 or Kodachrome 64 and stick with it until you really understand exposure, because jumping from one film to the other can become too confusing. When you get to the point where you can look at a scene and say, "Oh, that's a 60th of a second at f5.6" (or whatever) and be right, then I'd say you could move on to other films.

Exposure should be a fairly simple thing to learn, but people don't want to spend the time to do it properly. If you practice shooting with a properly calibrated, fully manual camera, using color slide film and making notes on your exposures, you will have a better understanding of how to get correct exposure no matter what type of film you use. All it takes is exposing yourself to proper exposure. □

# Recipes

## Rabbit— Always A Favorite

by Joan Cone

Your slow cooking pot or crockpot is excellent for preparing rabbit. First, there is no need to parboil rabbits, as the slow cooking method eliminates all undesirable flavor. Second, your rabbits are never dried out and result in moist, tender eating. Shrinkage is minimal or nonexistent. And finally, you can go out to hunt, fish or work, and when you return home, your rabbit is ready to serve.

### Menu

Rabbit In Crockpot  
Crisp Onion-Roasted Potatoes  
Red Cabbage With Apple  
Pineapple Grapefruit Mold  
Valerie's Cheese Pie  
Cookie Dough Pie Crust

### Rabbit in Crockpot

2 rabbits, cut into serving pieces  
Salt and pepper  
2 tablespoons vegetable oil  
1 onion, sliced  
1 tablespoon lemon juice  
1 rounded teaspoon sugar  
1/4 teaspoon mace  
1 bay leaf  
2 sprigs parsley  
1 cup port wine  
2 tablespoons currant jelly  
2 tablespoons cornstarch

Season rabbits with salt and pepper. Heat oil in a heavy skillet. Brown rabbit and lightly brown onion. Transfer rabbit and onion to crockpot and add lemon juice, sugar, mace, bay leaf, parsley and port. Cover and cook on LOW heat for 8 to 9 hours. Remove rabbit and turn crockpot on HIGH heat. Add currant jelly to juice in pot and let melt. Dissolve cornstarch in an equal amount of cold water and stir into liquid in crockpot. Cook until slightly thickened. Return rabbit to crockpot and heat through. Serve gravy over rabbit. (Serves 4 to 5)

### \*Crisp Onion-Roasted Potatoes

1 envelope Lipton Onion-Mushroom Recipe Soup Mix  
1/2 cup olive or vegetable oil  
1/4 cup margarine, melted  
1 teaspoon thyme leaves (optional)  
1 teaspoon marjoram leaves (optional)  
1/4 teaspoon pepper  
2 pounds all-purpose potatoes, cut into quarters, (can be left unpeeled)

Preheat oven to 450 degrees. In shallow baking or roasting pan, thoroughly blend all ingredients except potatoes. Add potatoes and turn to coat thoroughly. Bake, stirring occasionally, 60 minutes or until potatoes are tender and golden brown. Garnish, if desired, with chopped parsley. (Makes about 8 servings)

\*Recipe from *The Back Of The Box Gourmet* by Michael McLaughlin, Simon & Schuster, 1991.

### Red Cabbage With Apple

1-1/4 pounds red cabbage  
1 medium tart-sweet apple  
2 teaspoons vegetable oil  
1 medium onion, chopped  
1/8 teaspoon ground cloves  
1/2 cup orange juice  
1/2 cup water  
1/4 cup cider vinegar  
1 teaspoon brown sugar  
Salt and pepper to taste

Coarsely shred red cabbage on large holes of a hand grater or in a food processor. Core and slice apple, but do not peel. In a large nonreactive saucepan or flameproof casserole, heat oil. Add onion and cook over medium heat until softened, about 3 minutes. Add cabbage and apple and tumble to coat with oil. Add cloves, orange juice and water. Cover and cook, stirring occasionally, until cabbage is tender, 15 to 20 minutes. Combine vinegar and brown sugar. Stir into cabbage. Cook, stirring occasionally, for 10 minutes. Salt and pepper to taste. Serve hot. (Serves 4)

### Pineapple Grapefruit Mold

2 cans (8 ounces each) crushed pineapple, drain and reserve juice

1 can (16 ounces) grapefruit sections, drain and reserve juice  
2 packages (3 ounces each) lemon gelatin  
2 containers (8 ounces each) pineapple yogurt

Drain fruit well and reserve liquid. Add water to juice if necessary to make 2 full cups. Bring liquid to boiling and add gelatin. Cool until syrupy; add yogurt. Fold in fruit and pour into large mold. Chill and serve cold with sour cream. (Serves 8 to 10)

### Valerie's Cheese Pie

We were served this unique pie as guests of Valerie and John Roberts while trout fishing in Esquel, Argentina. Valerie is a delightful young person and an excellent cook.

1 egg  
1 cup sugar  
1-1/4 cups Ricotta lowfat cheese  
1/3 cup cognac or brandy  
1/2 cup chopped walnuts  
1/2 cup raisins  
Cookie Dough Pie Crust

Beat egg and sugar well; add Ricotta and cognac. Stir in nuts and raisins. Line a 9-inch pie plate with half of the pie dough. Spoon the filling into the pie shell. Cover with the remaining dough, seal and crimp edges. To glaze, brush the top of the pie with cold water and sprinkle with sugar. Cut several steam vents, using a sharp paring knife. Bake in a preheated 350 degree oven for 45 minutes or until filling bubbles. (Serves 8 to 10)

### Cookie Dough Pie Crust

2 tablespoons butter  
2 eggs, beaten  
2 cups flour  
1/2 teaspoon salt  
1/2 cup sugar  
2 teaspoons baking powder

In a large bowl, crumble butter. Add beaten eggs and remaining ingredients. Knead well until dough can be formed into 2 balls. Roll out dough to desired size. (Makes 2 crusts) □



# Safety

## Lake Patrols Are Lifesavers

by William Antozzi, Boating Safety Officer

Can you imagine buying your seventh and eighth engine for your boat? The "Queen Bee," owned and operated by Bee and Bill Antozzi, members of Flotilla 32, Division III, Fifth Coast Guard District, Southern Region, completely wore out six 350 cubic inch engines. It took almost 21 years to do it, so that amounts to a period of about seven years to wear out each set of engines. It cost over \$16,000 to replace the last pair. Inflation has taken its toll because the first replacement pair cost \$2,800 each. The vessel has been used almost exclusively for Coast Guard Auxiliary patrols, call outs, and search and rescue missions. Over the years it has logged 1,686 missions, 891 vessel assists or rescues, and has assisted or rescued 2,426 people. Property assisted or saved is estimated at \$11,103,000.

Replacing engines has been only part of the vessel operating costs. Insurance, slip rent, gasoline, lubricants, maintenance, and loss of income from invested capital amounts to a considerable sum. Crew time is donated, but would boggle the mind if calculated at a reasonable wage. Of course, there are a few nicks and scratches in the gelcoat on the hull but the vessel is sound as a dollar. Most damage has been caused by other vessels coming up alongside so questions can be asked or a motorboat examination can be requested. Good records have been maintained over the years and that's the source of the performance figures. It is difficult to say which will wear out during the next seven years, the engines or the crew.

The "Queen Bee" is only one of



*The Queen Bee; photo by Bill Antozzi.*

40 boats which patrol three large lakes in Virginia. Boaters have benefitted greatly from those safety patrols. For the past three years, the U. S. Coast Guard Auxiliary members who have their boats near Lakes Anna, Chesdin, and Smith Mountain have made lake patrols to assist boaters. The gasoline and oil costs were defrayed by the Law Enforcement Division of the Virginia Department of Game and Inland Fisheries during the first three years and in 1991 the U. S. Coast Guard paid those costs.

The lake patrols have been a real bargain. Each patrol boat is owned and operated by its captain. He and a crew of one or two are the products of intensive training to insure their professionalism. The vessels are expensive and cost many thousands of dollars. The owner must also pay slip rent, insurance, maintenance and repairs. The time of the captain and crew is also worth a lot. Some take time from work to patrol. Also, training to achieve proficiency does not come cheap. Average costs per hour are a real bargain. They have been only about \$4.00 and that includes gasoline, oil, the patrol boat, captain and crew.

The results have been outstanding. Over a four-year period there were

467 patrols consisting of 3,656 hours. The patrol-vessel crews assisted or rescued 366 boats and helped approximately 1,046 persons. The type of help given varied. Boats were towed back to port, engines were restarted, repairs were made so that boats could get underway again, water was pumped out to prevent sinking, and many persons were given first aid. In addition, countless boaters were given directions, advice and counsel, or warned about dangerous practices.

The patrol coordinator for Lake Anna is Leo H. Lafferty of Waynesboro, the U.S.C.G. Auxiliary Flotilla 82 Operations Officer. The Lake Chesdin coordinator is Colonel William Olmsted Antozzi of Petersburg, Flotilla 32 Operations Officer, and for Smith Mountain Lake it is John B. Earle of Danville, Division VIII Operations Officer. The Coast Guard Auxiliary vessel patrols are usually on weekends, but the Virginia Game Department wardens are on patrol every day during the boating season. Lake Chesdin also benefits from patrols by a Chesterfield County police patrol. All patrol vessels, Coast Guard Auxiliary and Game Department, carry VHF-FM radios, which enable them to communicate and cooperate. Recreational boaters can also benefit by having a VHF-FM radio on board. It is a great safety device, because when help is needed a patrol vessel crew is waiting on channel 16 to respond to any calls.

A Coast Guard computer printout shows that the average rescue involved property worth \$13,481.48. Total saved on the three lakes is \$4,853,331. The lake patrols continue to aid boaters in many ways. Their contribution to boating safety is immeasurable.

# Help Us Save Them

*This year,  
when you fill  
out your  
state income  
tax form,  
remember  
wildlife.*

**T**he responsibility for the protection and conservation of wildlife in Virginia lies with us all—you and me—and you can do your share by checking off a donation to Virginia's Nongame and Endangered Species Wildlife Program on your income tax form.

Developed and administered by the Virginia Department

of Game and Inland Fisheries, the designated stewards of the Commonwealth's fish and wildlife, Virginia's Nongame and Endangered Species Program is designed to monitor, recover, and manage the good health of all wildlife—from the tiny endangered tiger salamander to the rare northern flying squirrel. The program funds research and recovery programs that find out where rare species are, how fragile their exis-

tence is, and propose ways to establish and protect populations.

This year, check off a contribution to help the wild lives we cherish, or send a tax-deductible check to: Virginia Nongame Wildlife Fund—VW, Virginia Department of Game and Inland Fisheries, P.O. Box 11104, Richmond, VA 23230-1104.

## *Resource Guide Available on Virginia's Endangered Species*

**O**der the only comprehensive resource guide on Virginia's Endangered Species for \$32.95 (softcover) or \$59.95 (hardcover). This 675-page guide identifies and describes more than 250 rare and endangered plants and animals in Virginia. Produced by the Virginia Department of Game and Inland Fisheries and other state natural resource agencies, this book documents the latest scientific information on Virginia's endangered species, information which is available in no other publication. Send your

check plus 4.5 percent sales tax and \$2.50 shipping and handling charges to: McDonald and Woodward Publishing Company, P.O. Box 10308, Blacksburg, VA 24062-0308. Phone: (703) 951-9465.

To order a **Virginia's Endangered Species poster** of the illustration featured left, please write a check for \$8 made payable to: Treasurer of Virginia, and send to: VA Endangered Species Poster Offer, Attn: Diane Davis, VDGIF, P.O. Box 11104, Richmond, VA 23230-1104.







*Winter Comfort*  
By  
Bob Henley

## Winter Comfort

by Bob Henley

A limited edition  
of 950 . . .

Available now from  
*Virginia Wildlife*.

**W**e are proud to offer wildlife artist Bob Henley's limited edition print of two red foxes in snow to our *Virginia Wildlife* subscribers. Bob Henley's breathtaking work has been featured in the February and July 91 issues of *Virginia Wildlife*, and for weeks after those magazines appeared, people called us inquiring about Bob Henley prints for sale. We realized that our subscribers weren't content to have a Bob Henley work in their magazines, they want-

ed one for their walls! And, lo and behold! Bob has allowed us to make a special offer to our subscribers. First, you can have your very own *Winter Comfort* print for \$35 when you buy two one-year subscriptions to *Virginia Wildlife*. That's a savings of \$10 off the regular price of *Winter Comfort*.

Of course, if you've already given everyone you know (including yourself) a subscription to *Virginia Wildlife*, you can still purchase *Winter Comfort* for \$45.

Any way you look at it, we hope you're as happy as we are about the opportunity to own a Bob Henley limited edition print for under \$50. Orders yours today!

Use the gray card in this magazine to order your prints and subscriptions, or send in your list of gift subscriptions and the number of prints ordered with your check made out to: *Treasurer of Virginia*, to: Virginia Wildlife, P.O. Box 11104, Richmond, VA 23230-1104.



## Give Wildlife A Ride

Why not give wildlife a ride by ordering a Wildlife Conservationist license plate from the Department of Motor Vehicles? This brand-new plate, created by the Virginia Department of Game and Inland Fisheries, is designed to generate money for the Game Protection Fund, which is used for wildlife conservation management and research.

Order yours today by filling out the application at the bottom of the page (using the instructions on the opposite page to guide you). Show how much you care for Virginia's wildlife by purchasing a Wildlife Conservationist license plate today!



Application for:

- ☐ College/University Plates  
☐ Wildlife Conservationist Plates

Name of College/University (Please Spell Out - No Initials or Abbreviations)

OWNER'S NAME	FIRST	M	LAST	<p>FOR REGULAR PLATES ONLY:</p> <p><input type="checkbox"/> I DO NOT WISH TO APPLY FOR PERSONALIZED PLATES. SEND THE NEXT AVAILABLE NUMBER ISSUED TO COLLEGE/UNIVERSITY OR WILDLIFE CONSERVATIONIST. THE FEE IS \$25 ANNUALLY.</p> <p>FOR PERSONALIZED PLATES ONLY:</p> <p><input type="checkbox"/> I DO WISH TO APPLY FOR PERSONALIZED COLLEGE/UNIVERSITY OR WILDLIFE CONSERVATIONIST PLATES. THE FEE IS \$35 ANNUALLY.</p> <p>PRINT YOUR PLATE COMBINATION AS YOU WISH IT TO APPEAR ON YOUR LICENSE PLATE. YOU ARE ALLOWED:</p> <ul style="list-style-type: none"> <li>A MAXIMUM OF TWO TO SIX LETTERS AND/OR NUMBERS.</li> <li>SPACES, DASHES AND AMPERSAND (&amp;) ARE ALLOWED; HOWEVER THEY ARE CONSIDERED ONE SPACE AND CANNOT BE USED CONSECUTIVELY. NO OTHER PUNCTUATION IS ALLOWED.</li> </ul> <p>INDICATE THREE CHOICES IN ORDER OF YOUR PREFERENCE BELOW. IF YOU ARE APPLYING FOR COLLEGE/UNIVERSITY PLATES YOUR COMBINATION WILL BE PLACED ON THE PLATE BASED ON WHERE THE COLLEGE/UNIVERSITY CHOSE TO PLACE THEIR LOGO.</p> <p>FIRST CHOICE:</p> <table border="1" style="width: 100%;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>SECOND CHOICE:</p> <table border="1" style="width: 100%;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>THIRD CHOICE:</p> <table border="1" style="width: 100%;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table> <p>FOR A 'SAMPLE' COLLEGE/UNIVERSITY OR WILDLIFE CONSERVATIONIST PLATE:</p> <p><input type="checkbox"/> I DESIRE A SAMPLE PLATE. \$25 FEE (ONE PLATE WILL BE ISSUED - NOT FOR USE ON MOTOR VEHICLES)</p>																		
SS#/EMPLOYER ID#																						
CO-OWNER'S NAME	FIRST	M	LAST																			
SS#/EMPLOYER ID#																						
STREET ADDRESS																						
CITY	STATE		ZIP																			
CURRENT LIC. PLATE NO.:	EXPIRATION DATE:		YR																			
TITLE NO.:	TELEPHONE NO.:																					
IDENT. NO.:																						
OWNER'S SIGNATURE	DATE																					
CO-OWNER'S SIGNATURE	DATE																					
DMV USE ONLY: FEE \$																						
RENEW FOR TWO																						



